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REVIEW PROTOCOL

Nursing care to adult patient with chest drainage: scoping review protocol*

Cuidados de enfermagem ao paciente adulto com drenagem torácica: protocolo de scoping review

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ABSTRACT

Objective: to map nursing care employed to adult patients with chest drainage admitted to intensive care. **Methods:** scoping review to be conducted according to the Joanna Briggs Institute, with the following research question: "What are the nursing cares indicated to adult patients with chest drainage admitted to intensive care?" The search will be developed in five databases: Pubmed, Scopus, Embase, BVS and Web of Science, and the findings will be managed with the support of Rayyan software. Quantitative and qualitative studies, review articles, dissertations, theses, clinical guidelines and therapeutic protocols on the subject will be included, including gray literature. The total number of sources of evidence found and selected will be described. Through a narrative, the decision-making process of the inclusion of the studies will be detailed. The main findings must be described in line with the objective and the results related to the research question.
Descriptors: Chest Tubes; Nursing Care; Intensive Care Units.

RESUMO

Objetivo: mapear os cuidados de enfermagem empregados aos pacientes adultos com drenagem torácica internados em terapia intensiva. **Métodos:** *scoping review* a ser conduzida conforme o Joanna Briggs Institute, com a seguinte questão de pesquisa: "quais são os cuidados de enfermagem indicados aos pacientes adultos com drenagem torácica internados em terapia intensiva?". A busca será desenvolvida em cinco bases de dados: *Pubmed*, *Scopus*, *Embase*, BVS e *Web of Science*, e os achados serão geridos com o auxílio do *software* Rayyan. Serão incluídos estudos quantitativos e qualitativos, artigos de revisão, dissertações, teses, diretrizes clínicas e protocolos terapêuticos sobre a temática, incluindo a literatura cinzenta. Será descrito o número total de fontes de evidência encontradas e selecionadas. Através de uma narrativa, será detalhado o processo de decisão da inclusão dos estudos. Os principais achados deverão estar descritos em consonância com o objetivo e os resultados relacionados à questão de pesquisa.
Descritores: Tubos Torácicos; Cuidados de Enfermagem; Unidades de Terapia Intensiva.

INTRODUCTION

Chest drainage consists of the installation of a tubular drain in the pleural cavity, in order to drain the anomalous contents of the pleural space, aiming at pulmonary re-expansion. A drain is connected to a reducer bottle, working with a water seal system', responsible for storing the drained contents, or when there is bubbling, providing the air outlet of the pleural space. A second bottle may be attached to the system and connected to a continuous suction network, seeking to vacuum in a controlled manner and help maintain the balance of the intrathoracic negative pressure[1,2].

It is considered a safe and effective method, used for elective and/or emergency procedures in the treatment of pulmonary complications, such as: pneumothorax, hemothorax, complicated parapneumonic effusion, empyema, chylothorax[3] and in the postoperative period of chest and mediastinal surgeries.

The advent of the pandemic resulting from SARS-CoV-2 (Severe Acute Res-

piratory Syndrome Coronavirus- 2) increased the number of patients who needed mechanical ventilation, causing, among many other complications, an impact on the number of patients who presented pneumothorax[4.5] and, consequently, the need for chest drainage. Although mechanical ventilation is a fundamental technology for life maintenance, its prolonged use and the need to apply high values of ventilatory pressures can cause injury to lung structures, as well as evolve to severe complications[3].

Among the main complications of chest drainage are: infection, poor positioning of the drain, accidental removal, obstruction, emphysema, bleeding and exteriorization, which may lead to increased length of stay or morbidity or mortality rates[6].

Descriptive, Brazilian study [6], aiming to identify the predictors of complications of chest drainage in trauma victims, pointed out the main complications, namely: poor positioning of the drain requiring a new procedure, residual hemothorax/pneumothorax, pneumonia and infection, and permanence of the orifice outside the chest cavity. Data from the same study[6] also indicate that the rate of complications was 26.5%, especially the poor drain positioning (11.77%). Another Brazilian study [7], which evaluated the safety and viability of pleural catheters, obtained similar numbers, with complications occurring in 26.3% of the cases (n=19), also highlighting accidental drain displacement (10.5%).

Considering that chest drainage is a surgical procedure, with multiple indications and potential complications, it is important to emphasize the need to pay attention to the care that should be maintained during and after the procedure of the drain insertion[8], with a view to the effectiveness of treatment and the prevention of complications. Nursing acts at all stages in the care of patients with chest drainage, being paramount the implementation of evidence-based care that promotes the safety of the patient in question, as well as the safety of the team performing the professional practice, minimizing exposure to pathogens. Researchers from the Nursing Department, National University Hospital, Singapore, showed that although nursing professionals believe in the importance of training on chest drain, most (66.7%) did not receive training to update on the subject. In addition, about 45% of the nurses did not know or were not sure that the level of floating fluid in the drainage pipe was indicative of the proper functioning of the device[9].

Studies[2.3] point to the lack of uniformity of actions or proven evidence on the ways of drains handling, suggesting the development of more in-depth research on the subject and the creation of instruments that assist in the practice of care. Faced with this problem, the research problem guided by the PCC acronym was defined, namely: P (population) adult patients with chest drainage; C (concept) nursing care; C (context) intensive care. Thus, the question asked that will guide the research is: What are the nursing cares indicated to adult patients with chest drainage admitted to intensive care? Therefore, the objective of this scoping review is to map nursing cares employed to adult patients with chest drainage admitted to intensive care. This is aligned with the key elements that were formulated to contextualize the research question[10]. In order to avoid duplicities of reviews to answer the same research question, a search was carried out on the platforms International Prospective Register of Systematic Reviews (PROSPERO), Open Science Framework (OSF) and Database of Abstracts of Reviews of Effects (DARE), finding the absence of protocols or similar reviews to the research question of this study, making even more explicit the need to explore the topic[10].

METHOD

This is a scoping review, to be conducted according to the systematization of the Joanna Briggs Institute (JBI)[11]. Considering that systematic reviews are used to address more specific issues, in contrast, the scoping reviews are indicated to map concepts and present a broad view of the evidences pertaining to a specific topic, therefore, this research strategy that demonstrates affinity with the objective of the study to be developed[12].

In order to ensure the quality and transparency of the wording, the guide for review report will be used: Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) Checklist[10]. The PRISMA-SCR checklist was published in 2018. The checklist contains 20 essential report items and 2 optional items to include in a *scoping review*.

Protocol and registration

The protocol of this review was registered in the Open Science Framework (OSF) platform under the DOI: https://doi.org/10.17605/osf.io/T8RW9.

Eligibility criteria
The research will include publications available online, in full, in Portuguese, English and Spanish, with a time frame of the last 10 years. Quantitative studies, review articles, dissertations, theses, clinical guidelines and therapeutic protocols on the subject will be included. Gray literature will also be considered, considering selected, such as: reference lists based on the studies found, national and international agencies and institutions that have developed protocols and guidelines, such as materials made available on websites of governmental organizations (Ministry of Health, Federal Nursing Council (COFEN), Regional Nursing Council (COREN) and Non-Governmental Organizations (NGOs): *Sociedade Brasileira de Cirurgia Torácica* (SBCT), Society of Thoracic Surgeons (STS), American Thoracic Society (ATS) and articles found in the Google Scholar tool[10]. The search strategy for this research will remain open, so it can be adapted in the research development, as the reference lists of all the included sources of evidences are analyzed for possible inclusion of additional studies.
The Participants, Concept and Context structure - PCC will be considered and described below:

Participants
Adults using chest drainage in intensive care environment.

Concept
Nursing care to be used for adult patients with chest drainage, with emphasis on the following categories: assembly and handling of different chest drainage systems; drain milking and extenders; evaluation, transport and mobilization of the patient with chest drainage; prevention of infections and maintenance of the system in cases of patients in respiratory and/or contact precautions; record of information in medical records; diagnosis, interventions and all results related to the patient with chest drainage.

Context
Intensive care, without restrictions related to the country of study.
Studies of the editorial type, letter to the editor, opinion articles and duplicate studies in data sources will be excluded. Articles that do not respond to the research question or focus on pediatrics or animals will also be excluded.

Sources of information
The search will be developed from September to December 2022, in the *Pubmed, Scopus, Embase*, BVS e *Web of Science* databases.

Search strategy
Initially, a search was carried out in Google Scholar on the research theme for the registration of the relevant words contained in the titles and abstracts of articles, later used to define the descriptors. Therefore, the existing controlled descriptors in the Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH) were selected, along with non-controlled descriptors related to the topic (Figure 1).

In order to provide the research replicability the search strategy was established [10]. This was developed by one of the researchers and reviewed by a librarian, with the combination of the descriptors previously defined using the Boolean AND and OR operators. In addition, the strategy was adapted according to the particularities of each data source and/or information source included (Figure 2).

Selection of studies
After the search, all the identified records will be transported and grouped in the Rayyan software[13]. In this tool it is possible to stratify the items according to each step of the selection order, complying with the methodological recommendations of this protocol.

Data mapping process
Initially, the researchers will perform a test in two or three articles to ensure data reliability [10]. The search will be carried out by peers, maintaining the methodological rigor, with blinded strategy. In situations where differences occur between the two researchers, a meeting will be held between the collaborators to establish the consensus, if there is no consensus a third reviewer will be included. Regarding the materials available in the gray literature, the titles, objectives and abstract/ presentation will be performed. However, the full reading of these studies can be determined by the collaborators involved.

Items of data
The extracted data will include details about the author, year, country of origin, purpose of the study, drawing, scenario, population and sam-

Non-controlled descriptors	Chest drainage.
DeCS	Pleural cavity; thoracic surgery; nursing care; drainage; thoracic wall; pneumothorax; thoracic surgical procedures; protocols; patient safety; suction; thoracotomy; thoracic tubes; thorax.
MeSH	Nursing; nursing, practical; nursing care; chest tubes; drainage; thorax; thoracostomy; thoracotomy; adult; nursing protocols; thoracic surgery.

Source: Elaborated by the authors, 2022.
Figure 1 – Controlled and non-controlled descriptors for search strategy. Porto Alegre, RS, Brazil, 2022

Pubmed and Scopus	(Nursing OR "Nursing Practical" OR "Nursing care") AND ("Chest Tubes" OR Drainage AND Thorax) OR (Thoracostomy OR Thoracotomy) AND (Adult) AND (Pneumothorax) AND ("Nursing Protocols") AND ("Thoracic Surgery")
Embase	Domain 1: (Nursing OR "Nursing Practical" OR "Nursing care") Domain 2: [AND]("Chest Tubes" OR Drainage AND Thorax) OR (Thoracostomy OR Thoracotomy) Domain 3: [AND] (Pneumothorax) AND ("Nursing Protocols") AND ("Thoracic Surgery") Domain 4: [AND] (Adult)
BVS	(Nursing) OR ("Nursing Practical") OR ("Nursing care") AND ("Chest Tubes") OR (Drainage) AND (Thorax) OR (Thoracostomy) OR (Thoracotomy) AND (Adult) AND (Pneumothorax) AND ("Nursing Protocols") AND ("Thoracic Surgery") ("Pleural Cavity") AND ("Thoracic Surgery") AND ("Thoracotomy") AND ("Thoracic Tubes") AND (Thorax) AND ("Nursing Cares") AND (Drainage) OR (Suction) AND (Pneumothorax) AND ("Thoracic Surgery Procedures") AND ("Protocols") AND ("Patient Safety")
Web of Science	TS=((Nursing OR "Nursing Practical" OR "Nursing care") AND ("Chest Tubes" OR Drainage AND Thorax OR Thoracostomy OR Thoracotomy) AND (Pneumothorax AND "Nursing Protocols" AND "Thoracic Surgery") AND (Adult))

Source: Elaborated by the authors, 2022.
Figure 2 – Search strategy according to database. Porto Alegre, RS, Brazil, 2022

ple size, chest drainage care and key findings relevant to the purpose of the review. Any disagreements that arise among the reviewers will be resolved by discussion or with a third reviewer, if appropriate. The authors of the articles will be contacted to request missing or additional data, when necessary. The modifications will be detailed in the full scoring review [10].

Critical evaluation of individual sources of evidence

According to PRISMA-SCR, the scope reviews are usually conducted to provide an overview of existing evidences, regardless of methodological quality or risk of bias[14.15].

Additional analyzes of evidences quality assessment, including sensitivity or subgroup analyzes and meta-regression analyzes, are discharged in this type of study[10]. Thus, a mapping of the identified evidences will be presented to answer the review question or meet the pre-defined objectives. If the researchers identify the need for evaluation regarding methodological quality or risk of bias during the research development, a clear justification will be provided, in line with the objectives of the review, together with a description of the methodological approach.

Synthesis of the results

The total number of sources of evidence found and selected will be described. Through a narrative, the decision-making process of the inclusion of the studies will be detailed, identifying the source of evidences. The main findings must be described in line with the objectives adopted and the results related to the research question.

In case there is a very high number of sources of evidences for the inclusion in the manuscript, the results may be presented in an attachment or complementary file.

Consistent with the original PRISM statement, to make clear the process of selection of studies and facilitate a possible reproduction of this review, a flowchart will be developed detailing the steps of inclusion decision, the search results, exclusion of duplicates, selection of sources, reading of texts in full, indication of the need for a new search and presentation of the final abstract[10]. This review will support the development of a nursing care protocol for adult patients with chest drainage, which will be presented as a product in the development of a professional master's dissertation.

*Paper extracted from the master's dissertation "Elaboration of care protocol on Nursing cares with chest drainage", presented to the Federal University of Health Science of Porto Alegre, Porto Alegre, RS, Brazil.

CONFLICT OF INTERESTS

The authors have declared that there is no conflict of interests.

REFERENCES

1. Martins GS, Turrissi L, Spaziani AO, Chalub LR, Abílio C, Barbosa TC, et al. Pneumotórax espontâneo em paciente jovem: relato de caso. Rev Med Minas Gerais [Internet]. 2020 [cited 2022 May 20];30(esp):6. Available from: http://www.rmmg.org/artigo/detalhes/2687

2. Silva LDC, Brito LL. Manipulação de drenos mediastinais e pleurais: existe evidência científica? J Manag Prim Health Care. 2016;6(1):86-102. https://doi.org/10.14295/jmphc.v6i1.236

3. Reinaldo LGC, Alencar AS, Leite CBC, Silva IM, Martins TBP, Lima MFBCN, et al. Drenagem de tórax em pacientes com COVID-19. J Cienc Saude HU-UFPI. 2021;4(1):14-23. https://doi.org/10.26694/jcshuufpi.v4i1.844

4. Ministério da Saúde (BR). Orientações sobre a intubação orotraqueal em pacientes com COVID-19 [Internet]. Brasília: Ministério da Saúde; 2021 [cited 2022 May 20]. Available from: https://www.gov.br/saude/pt-br/coronavirus/publicacoes-tecnicas/recomendacoes/orientacoes-sobre-intubacao-orotraqueal-em-pacientes-com-covid-19

5. Carvalho EA, Oliveira MVB. Safety model for chest drainage in pandemic by COVID-19. Rev Col Bras Cir. 2020;47:e20202568. https://doi.org/10.1590/0100-6991e-20202568

6. Mendes CA, Hirano ES. Predictors of chest drainage complications in trauma patients. Rev Col Bras Cir. 2018;45(2):e1543. https://doi.org/10.1590/0100-6991e-20181543

7. Abrão FC, Abreu IR, Cavalcanti MG, Pompa-Filho JF. Use of indwelling pleural catheters for the definitive treatment of malignant pleural effusion. J Bras Pneumol. 2017;43(1):14-7. https://doi.org/10.1590/S1806-37562016000000021

8. Anderson D, Chen SA, Godoy LA, Brown LM, Cooke DT. Comprehensive Review of chest tube management: a review. JAMA Surg Intern. 2022;157(3):269–74. https://dx.doi.org/10.1001/jamasurg.2021.7050

9. Hasselmann BNO, Ranção CS, Tavares GS, Almeida LF, Camerini FG, Paula VG. Good practices in nursing in the use of chest tubes: an integrative review. Glob Acad Nurs. 2021;2(2):e173. https://dx.doi.org/10.5935/2675-5602.20200173

10. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. Ann Intern Med. 2018;169(7):467-73. http://dx.doi.org/10.7326/M18-0850

11. Aromataris E, Munn Z, editors. JBI manual for evidence synthesis [Internet]. Adelaide: JBI; 2020 [cited 2022 May 23]. Available from: https://jbi-global-wiki.refined.site/space/MANUAL

12. Tricco AC, Lillie E, Zarin W, O'Brien K, Colquhoun H, Kastner M, et al. A scoping review on the conduct and reporting of scoping reviews. BMC Med Res Methodol. 2016;16(15). https://doi.org/10.1186/s12874-016-0116-4

13. Intelligent Systematic Review. Rayyan for organizations [Internet]. c2022 [cited 2022 May 23]. Available from: https://www.rayyan.ai/

14. Peters MDJ, Godfrey CM, Khalil H, McInerney P, Parker D, Soares CB. Guidance for conduc- ting systematic scoping reviews. Int J Evid Based Healthc. 2015;13:141-6. https://doi.org/10.1097/XEB.0000000000000050

15. Peters MDJ, Godfrey C, McInerney P, Baldini C, Khalil H, Parker D. Scoping reviews. In: Aromataris E, Munn Z, editors. Joanna Briggs Institute Reviewer's Manual [Internet]. Australia: JBI; 2017 [cited 2022 May 20]. Available from: https://jbi-global--wiki.refined.site/space/MANUAL/4687342/Chapter+11%3A+Scoping+reviews

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